

Transversity and Meson Production

L. Gamberg

Dept. of Physics and Astronomy, Penn State University Berks-Lehigh Valley

Both meson photo-production [1] and semi-inclusive deep inelastic scattering [2] can potentially probe transversity in the nucleon. We explore how that potential can be realized dynamically. The role of re-scattering in exclusive [3] and inclusive [4] meson photo-production as a source for transverse polarization asymmetry is examined. We use a dynamical model to calculate the asymmetry and relate that to the transversity distribution of the nucleon [5]. Further we consider how the nucleon's tensor charge can be calculated in this context [6].

References

- [1] M. Diehl, Eur. Phys. J. **C19**, 485 (2001).
- [2] A.M. Kotzinian and P.J. Mulders, Phys. Lett. **B406**, 373 (1997); D. Boer and P.J. Mulders, Phys. Rev. D **57**, 5780 (1998).
- [3] G.R. Goldstein and J.F. Owens, Phys. Rev. D **7**, 865 (1973); Nucl. Phys. **B71**, 461 (1974).
- [4] S. Brodsky et al., Phys. Lett. **B530**, 99 (2002); J.C. Collins, Nucl. Phys. **B396**, 161, (1993); Phys. Lett. **B536**, 43 (2002); X. Ji and F. Yuan, arXiv: hep-ph/0206057, 2002.
- [5] G.R. Goldstein and L. Gamberg “*Transversity and Meson Production*”, Invited Talk: 31st International Conference on High Energy Physics, Amsterdam, 24-31 July 2002.
- [6] L. Gamberg and G.R. Goldstein, Phys. Rev. Lett. **87**, 242001 (2001); “*Flavor Spin Symmetry and the Tensor Charge*”, Proceedings of 3rd Circum-Pan-Pacific Symposium on High Energy Spin Physics (SPIN 2001), Beijing, China, 8-13 Oct 2001.